DETAILED ACTION

Claim Status

1.   Claims 1-18 are pending in the instant application.

Claims 1-6, 13-18 are rejected.
Claims 7-12 are objected to.

Incorporation by Reference

2.   The attempt to incorporate subject matter into this application by reference to the article, entitled "A Statistical Model For Allocating Bandwidth To Best-Effort Internet Traffic," 2004 [In Preparation] on page 3 of Applicant's specification is ineffective because the referenced documents are not clearly identified as required by 37 CFR 1.57(b)(2)).

The incorporation by reference will not be effective until correction is made to comply with 37 CFR 1.57(b), (c), or (d). If the incorporated material is relied upon to meet any outstanding objection, rejection, or other requirement imposed by the Office, the correction must be made within any time period set by the Office for responding to the objection, rejection, or other requirement for the incorporation to be effective. Compliance will not be held in abeyance with respect to responding to the objection, rejection, or other requirement for the incorporation to be effective. In no case may the correction be made later than the close of prosecution as defined in 37 CFR 1.114(b), or abandonment of the application, whichever occurs earlier.

Any correction inserting material by amendment that was previously incorporated by reference must be accompanied by a statement that the material being inserted is

the material incorporated by reference and the amendment contains no new matter. 37

CFR 1.57(f).

Claim Objections

3.   Claims 13 and 17 are objected to because of the following informalities: Claims

13 and 17 contain the acronym QoS. These acronyms should be expanded with their

first use in every independent limitation for clarity. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

Claims 13 -18 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

Claims 13 and 17 provides for the use of the mathematical model as specified,

but, since the claim does not set forth any steps involved in the method/process, it is

unclear what method/process applicant is intending to encompass. A claim is indefinite

where it merely recites a use without any active, positive steps delimiting how this use is

actually practiced.

Claims 13-18 are rejected under 35 U.S.C. 101 because the claimed recitation of

a use, without setting forth any steps involved in the process, results in an improper

definition of a process, i.e., results in a claim which is not a proper process claim under

35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and

Clinical Products, Ltd. v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Any claim not directly rejected on 35 U.S.C 112, 2nd stands rejected due to its

dependency.

The art rejections of the claim(s) listed above are applied as best understood in

light of the rejection under 112, 2nd paragraph discussed above.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
conditions and requirements of this title.

4.   Claims 13 -18 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter.

Claims 13 and 17 are rejected as being directed to an abstract idea, being a

mathematical model. While claim 13 and 17 are directed to a method, the claim is only

directed to the mathematical formula set forth to represent a model. The claimed

methods are only directed to a model. With only the model present in the claims they

consist solely of mathematical operations without some claimed practical application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public
use or on sale in this country, more than one year prior to the date of application for patent in the United
States.

5.   Claims 1-3, 6 are rejected under 35 U.S.C. 102(b) as being anticapted by U.S.

Patent No. 5812526 to Chang et al., hereinafter "Chang".

Regarding claim 1 Chang discloses a method for determining a bandwidth required for

meeting one or more quality-of-service ("QoS") criterion on a transmission link [Chang:

Source nodes may transmit cells at a fixed bandwidth or a variable bandwidth.

Associated with the cells of each communication is a QoS requirement. Each node may

have plural queues including one queue for each QoS requirement (Column 7, lines 52-

65)] comprising the steps of:

generating a plurality of streams of traffic for the transmission link [Chang: Each

queue 110, 120 is for storing cells received from incoming bitstreams for later

transmission on one or more outgoing bitstreams (Column 11 line 45 - Column 12 line

6)];

conducting a plurality of simulations of bandwidth for the link, based on

generated traffic streams and using systematically varying values of the one or more

QoS criterion [Chang: Illustratively, one queue is provided for each different type of QoS

accommodated by the node. In FIG. 6, the QoS's are broadly grouped into delay

sensitive (such as audio, video or interactive data bearing cells) and delay insensitive

(such as transactional data bearing cells) (Column 11 line 45 – Column 12 line 6) In the fuzzy congestion controller 230, the two threshold model is used as a basis to derive the fuzzy logic rule base. Through simulation, the parameters of queue occupancy q, queue occupancy variance .DELTA.q and cell loss probability p.sub.l have been discovered to provide a good basis for determining the "congestiveness" of a specific queue 110 or 120 (FIG. 6) at the node 100 (FIG. 6) (Column 14, lines 6-18)];

developing a model addressed to a relationship between bandwidth and the one or more QoS criterion based on the simulations [Chang: Below, the fuzzy logic processing of the fuzzy bandwidth calculator 210, fuzzy admission controller 220 and fuzzy congestion controller 230 are discussed in greater detail (Column 14, lines 6-8)]; and

applying the developed model to determine bandwidth required to meet the one or more QoS criterion on a link [Chang: The operation of the fuzzy bandwidth calculator 210 (FIG. 7) (Column 16, lines 58-67)].

Regarding claim 2 Chang discloses the method of claim 1 wherein each of the generated traffic streams has a fixed traffic bit rate and the traffic bit rate varies from stream to stream

[Chang: Each of the nodes communicate with each other by transmitting a bitstream to one another via links, which bitstream is organized into fixed length timeslots. Communication is achieved according to the ATM protocol whereby the nodes selectively read fixed length cells from, and write fixed length cells into, the fixed length timeslots of the bitstream. Source nodes may transmit cells at a fixed bandwidth (Column 7, lines 52-65)].

Regarding claim 3 Chang discloses the method of claim 1 wherein the streams of traffic are organized into packets and the traffic streams are defined by packet arrivals and sizes [Chang: Communication is achieved on the communication network 10 by transmitting a bitstream on the links. The bitstream is organized into fixed length time slots. Each node that desires to communicate writes fixed length packets called "cells" into the timeslots (Column 1, lines 37-47)].

Regarding claim 6. Chang discloses the method of claim 1 wherein the step of conducting plural simulations includes the sub-steps of: choosing a trial bandwidth for a given simulation; and iteratively repeating the simulation with an incremental change in the trial bandwidth until a QoS value realized for the simulation substantially matches a selected QoS criterion

[Chang: In the fuzzy congestion controller 230, the two threshold model is used as a basis to derive the fuzzy logic rule base. Through simulation, the parameters of queue occupancy q, queue occupancy variance .DELTA.q and cell loss probability p.sub.l have been discovered to provide a good basis for determining the "congestiveness" of a specific queue 110 or 120 (FIG. 6) at the node 100 (FIG. 6). In addition, the simulations reveal that the following term sets provide an optimal basis for determining traffic load adjustment: T(q)=[E,F], T[.DELTA.q)=[N, P], T(p.sub.l)=[S, NS] and T(y)=[DS, NC, IS, IM] (Column 14, lines 6-18)].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

7.   Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Chang in view of "Internet Traffic: Statistical Multiplexing Gains" by Cao et al., published

2/2002 hereinafter "Cao".

        Regarding claim 4 Chang teaches the method of claim 1 wherein the traffic

streams are generated [Chang: Each queue 110, 120 is for storing cells received from

incoming bitstreams for later transmission on one or more outgoing bitstreams. (Column

11 line 45 – Column 12 line 6)].

        Chang does not expressly teach that the generated bitstream is generated

synthetically based on a statistical model.

        Cao teaches generating the bitstream synthetically with a statistical model [Cao:

We found that very simple statistical time series models, which we call fractional sum

difference (FSD) models and FSDMA(1) models, provide an excellent fit to the ... for the

live and synthetic link packet traces (Page 1, right column section III)].

It would have been obvious to a person of ordinary skill in the art at the time of

Applicant's invention to combine the bandwidth calculations and modeling of Chang with

the statistical model of Cao.

The motivation for doing so would have been to use the simple time series

models in the testing of internet traffic [Cao: More broadly, the results show that

engineering studies that are meant to apply to the Internet as a whole, and that use

synthetic or live packet traffic to assess performance, need to consider packet traces

varying across a wide range of magnitudes of statistical multiplexing in order to achieve

generality (Page 2, right column, last paragraph)]

Regarding claim 5 Chang in view of Cao teaches the method of claim 4 wherein

the statistical model is a Fractional Sum Difference model [Cao: We found that very

simple statistical time series models, which we call fractional sum difference (FSD)

models and FSDMA(1) models, provide an excellent fit to the … for the live and

synthetic link packet traces (Page 1, right column section III)].

Allowable Subject Matter

8.   Claims 7-12 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

The following is an examiner's statement of reasons for indicating allowable

subject matter.

While Cao teaches determining the bandwidth necessary to satisfy a QoS term, and Cao teaches the use of a FAD model neither/none of these reference(s) taken either alone or in combination with the prior art of record disclose where the model takes the form as claimed in claims 7 and 11specifically including:

(claim 7) The specific model as claimed in claims 7

(claim 11) The specific model as claimed in claims 11,

in combination with the remaining elements and features of the claimed invention. It is for these reason that the applicant's invention defines over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUKE OSBORNE whose telephone number is (571)272-4027. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Luke Osborne/
Examiner, Art Unit 2123

/Paul L Rodriguez/
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